Dr. Edilene Siqueira (esiqueira@carrerasresearch.org)

Post Doc researcher at Guil's lab

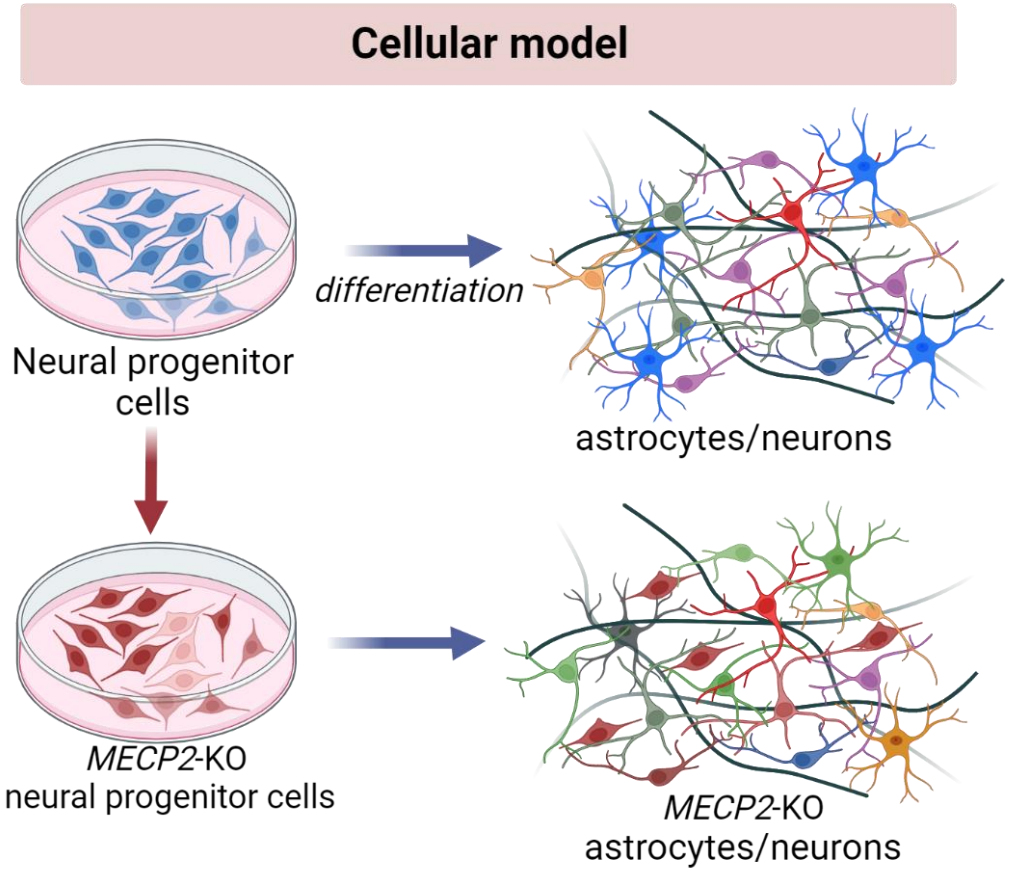
NEAT1 dysregulation in Rett syndrome: unveiling pathological mechanisms and therapeutic potential

Regulatory RNA and chromatin Group

Modeling Rett syndrome in a dish

Non-coding RNAs in Rett syndrome

- Large part of the genome is transcribed as ncRNAs
- NcRNAs play a regulatory role in gene expression
- Implicate in many pathological mechanisms, including developmental and neurological disorders
- Highly abundant in the brain
- Role in neurodevelopment, maturation and synapsis plasticity and formation



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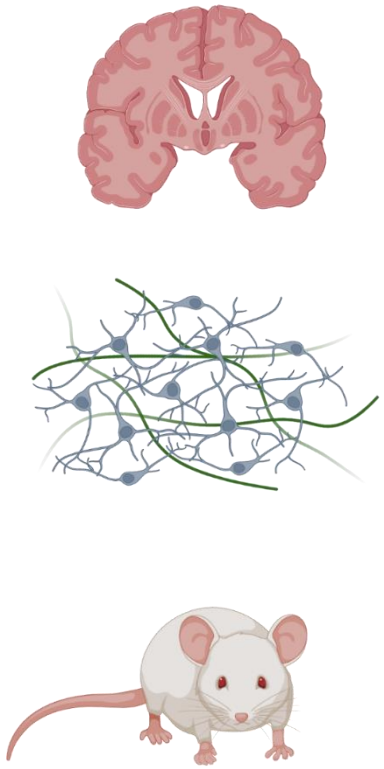
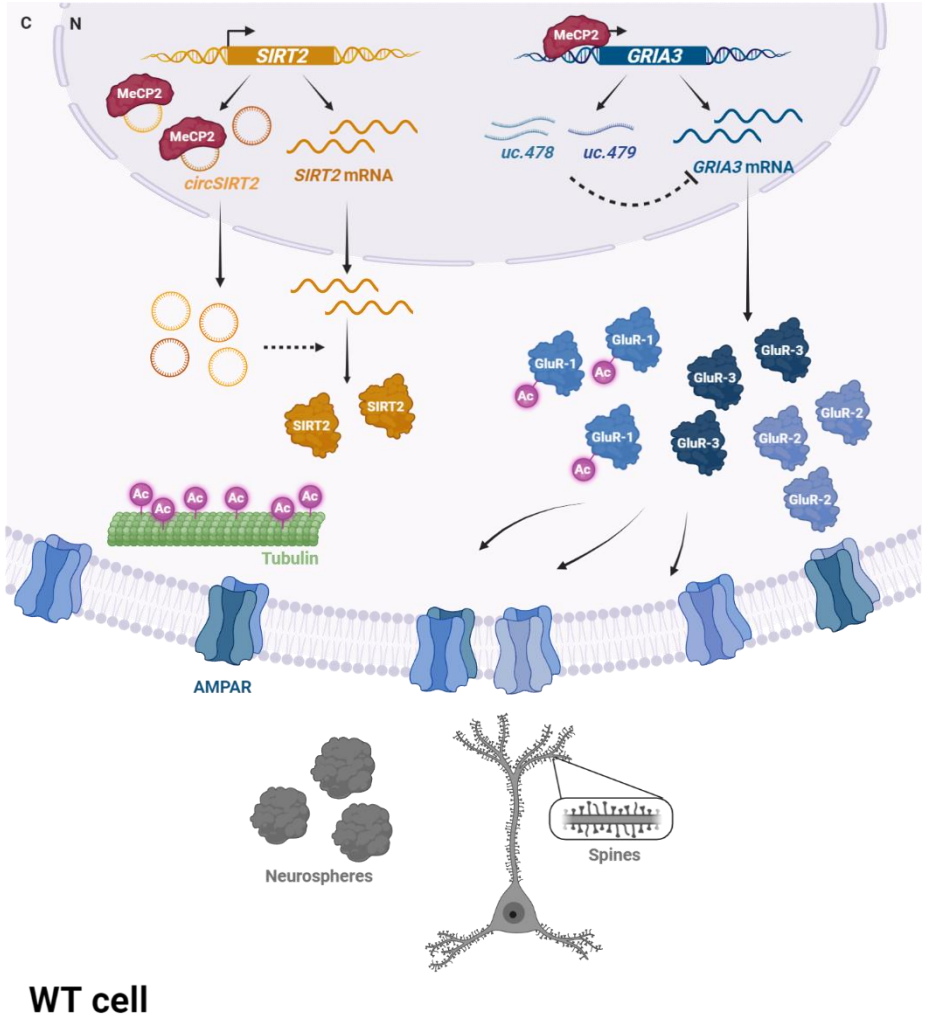
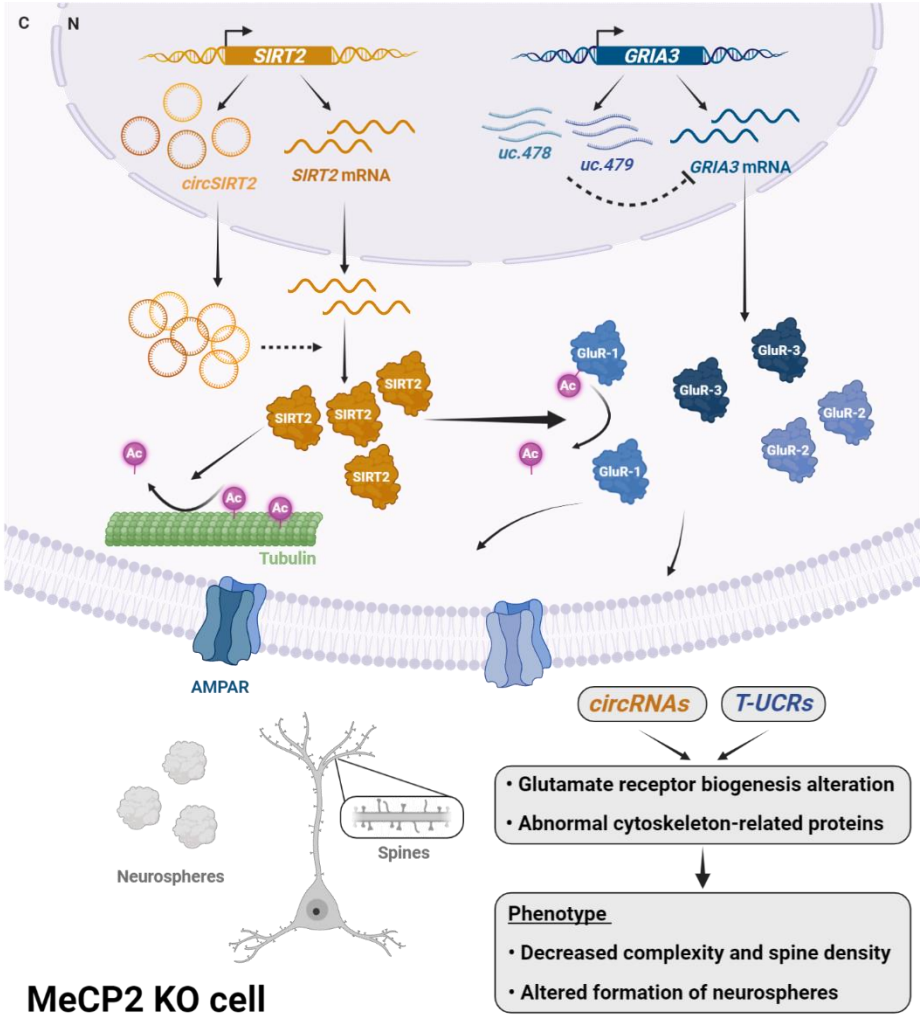




WT cell



MeCP2 KO cell

circRNAs | T-UCRs

- Glutamate receptor biogenesis alteration
- Abnormal cytoskeleton-related proteins

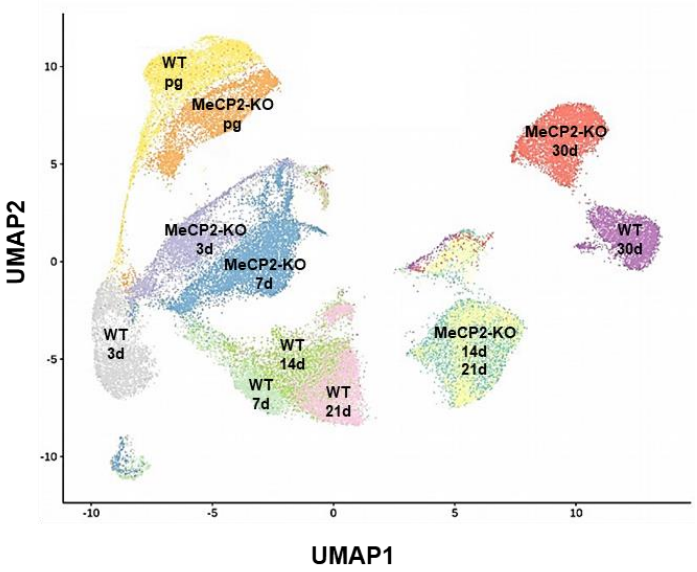
Phenotype

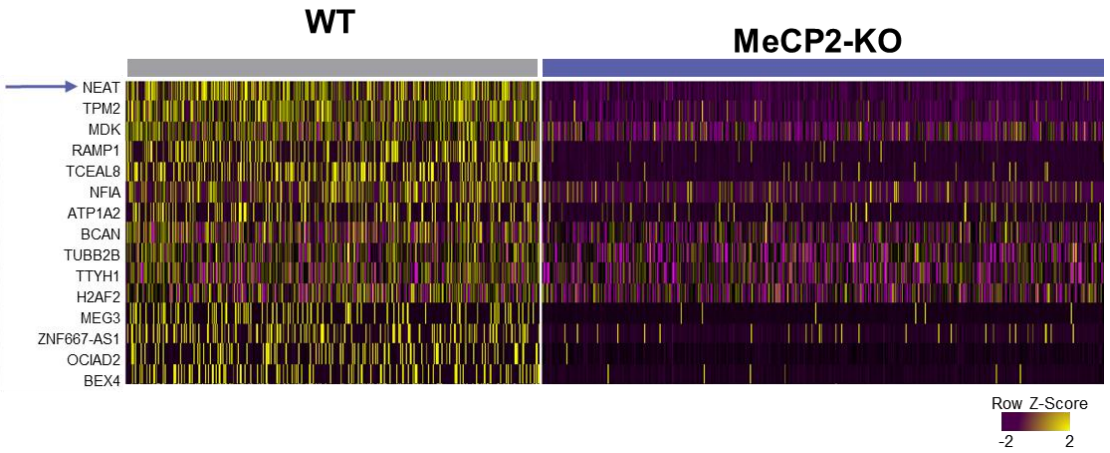
- Decreased complexity and spine density
- Altered formation of neurospheres

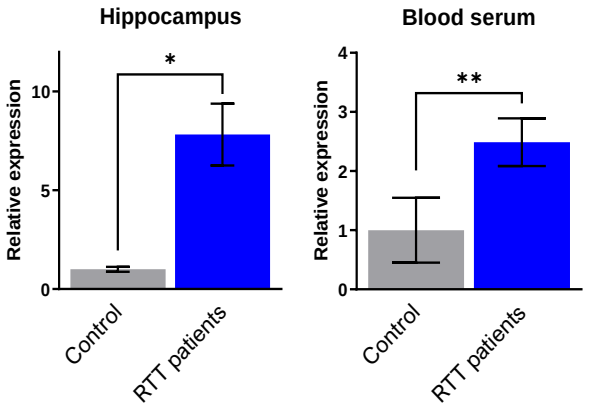
Siqueira et al., Mol Ther - Nucleic Acids 2021

NEAT1 dysregulation in Rett syndrome

- *NEAT1* is dynamic dysregulated in RTT's cellular models and in patients' samples







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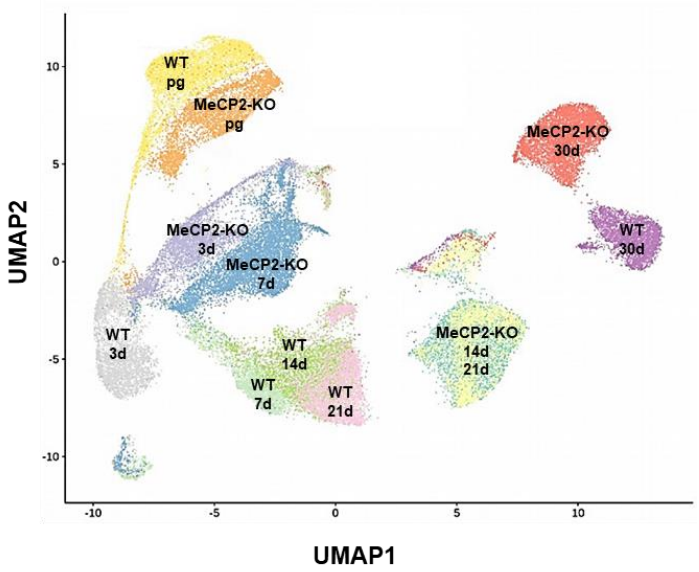
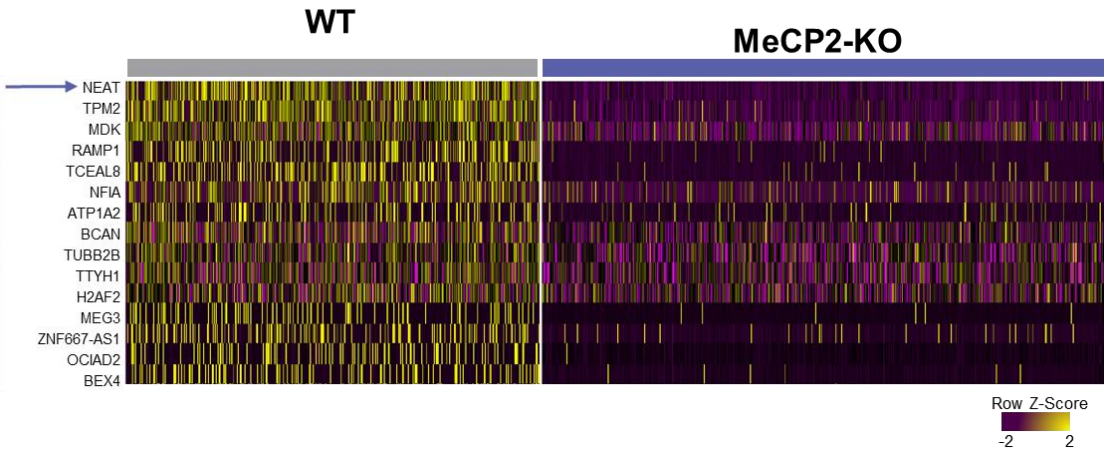
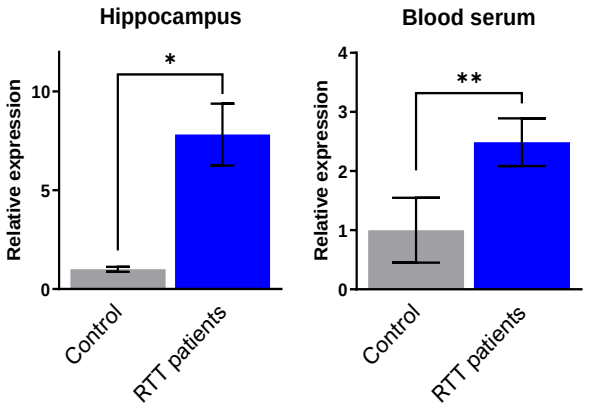
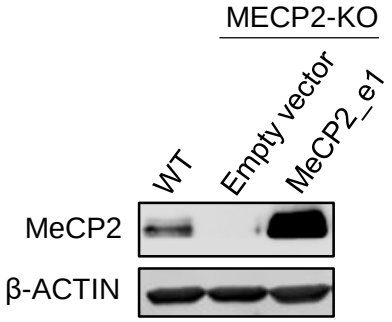
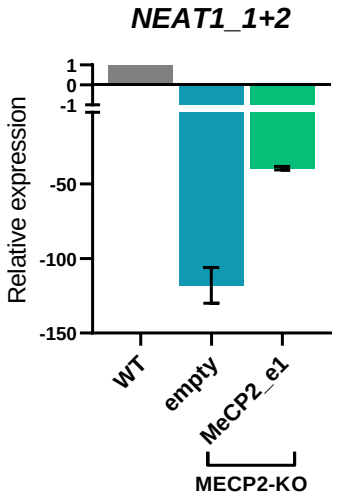






- *MECP2* restores *NEAT1* expression





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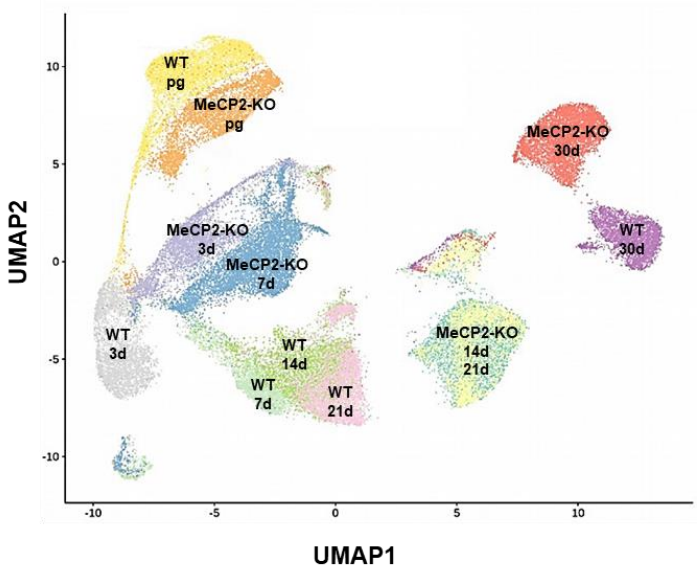

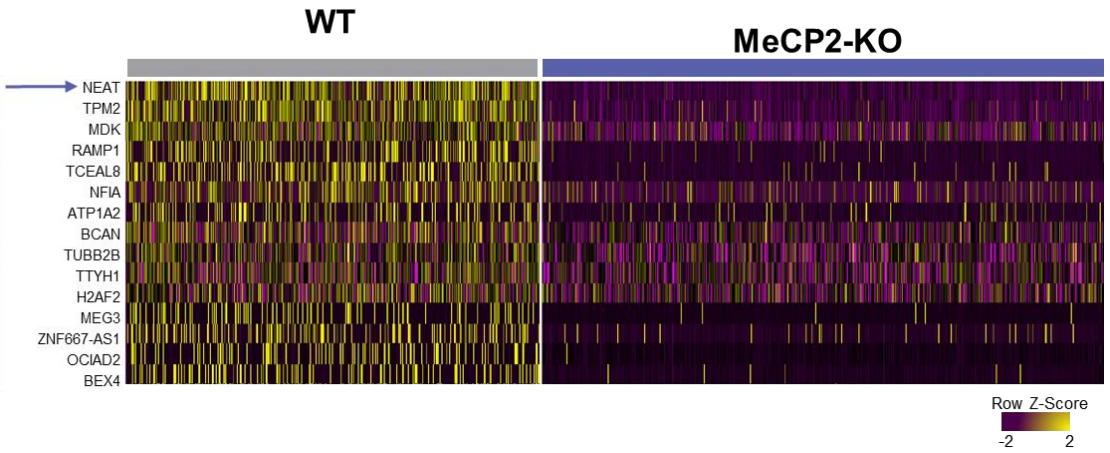

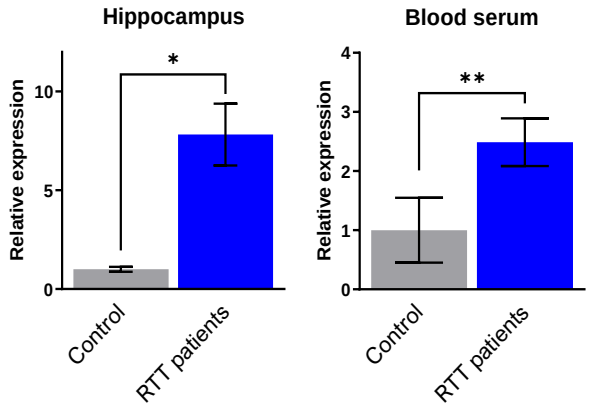

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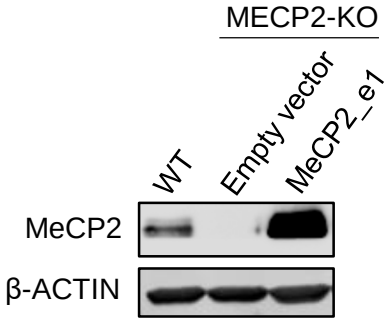
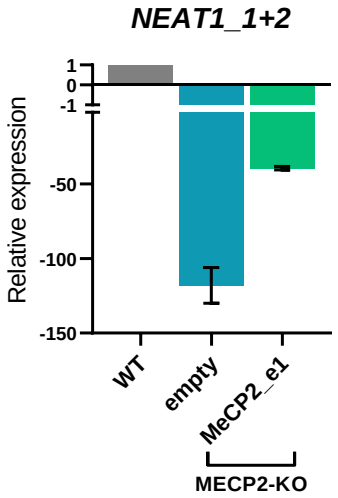
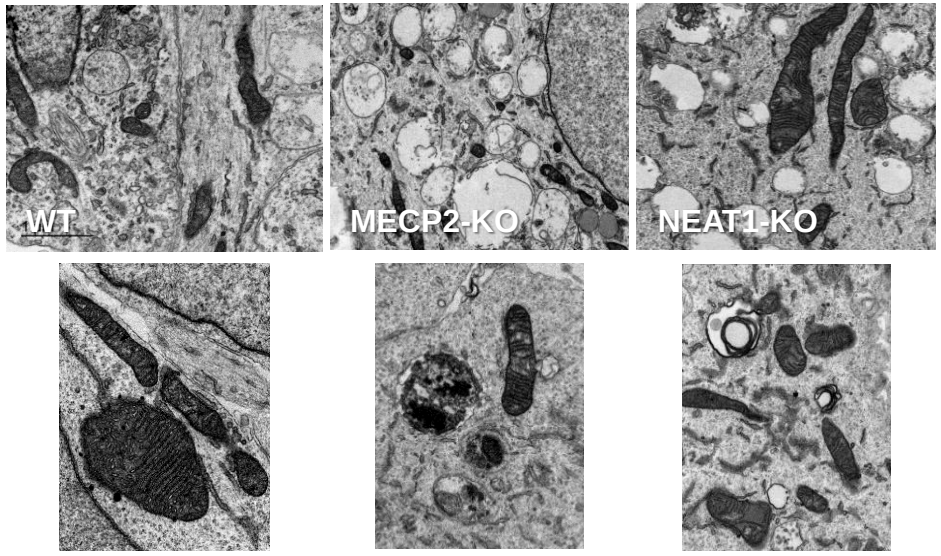
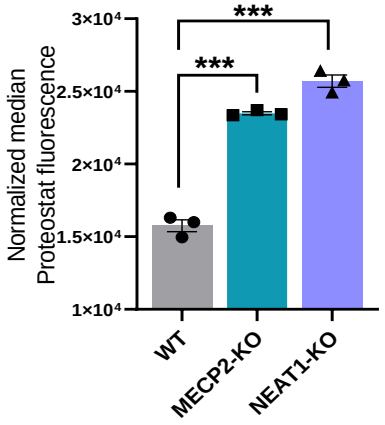




- Protein accumulation, autophagy impairment





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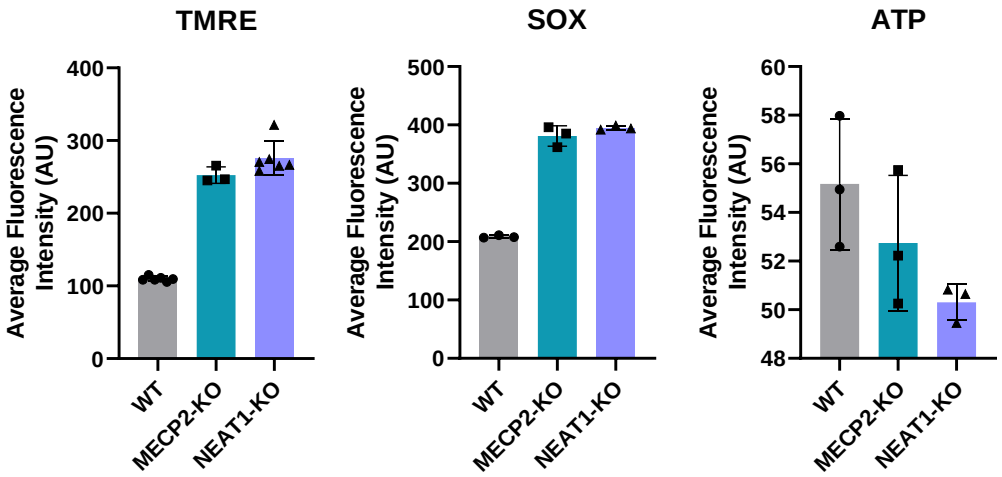
- Mitochondria dysfunction



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Thank you! Merci!

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Instituto de Investigación CONTRA LA LEUCEMIA Josep Carreras

International Rett Syndrome Foundation
Accelerating Research. Empowering Families.

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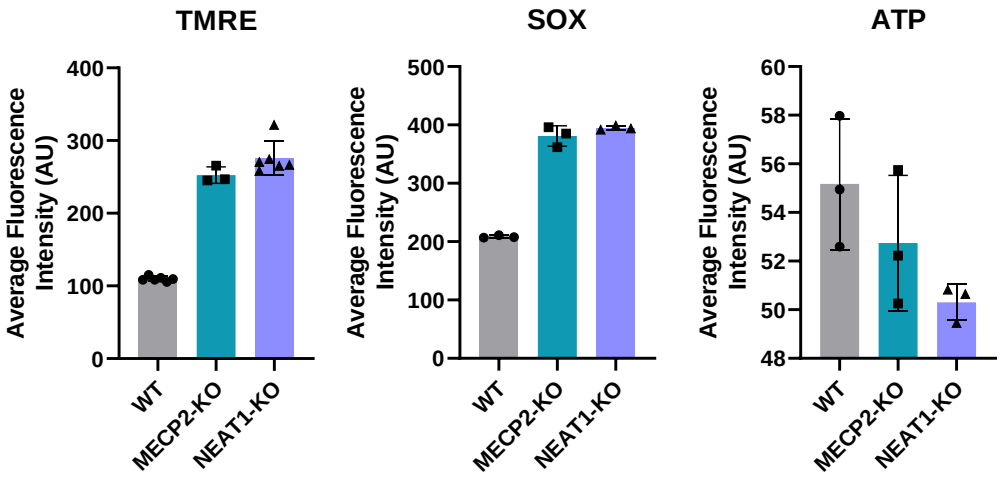
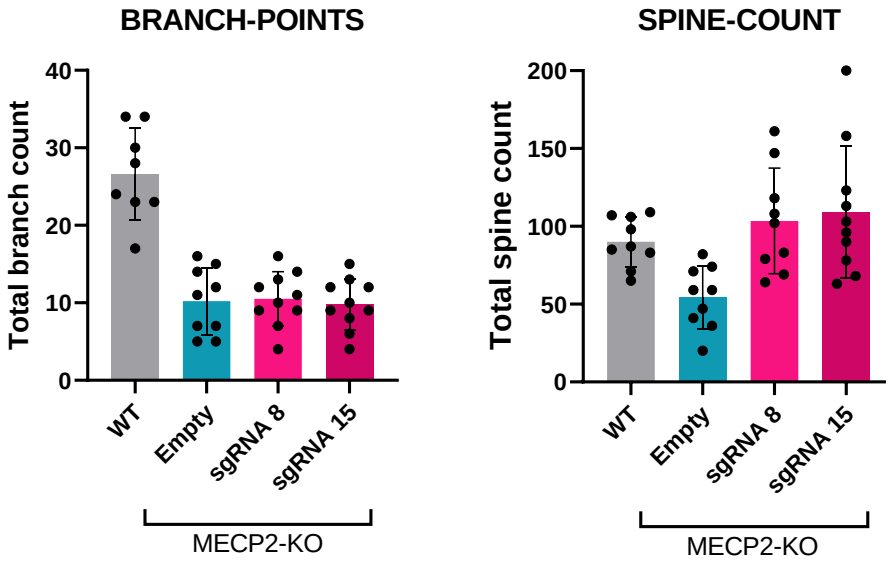
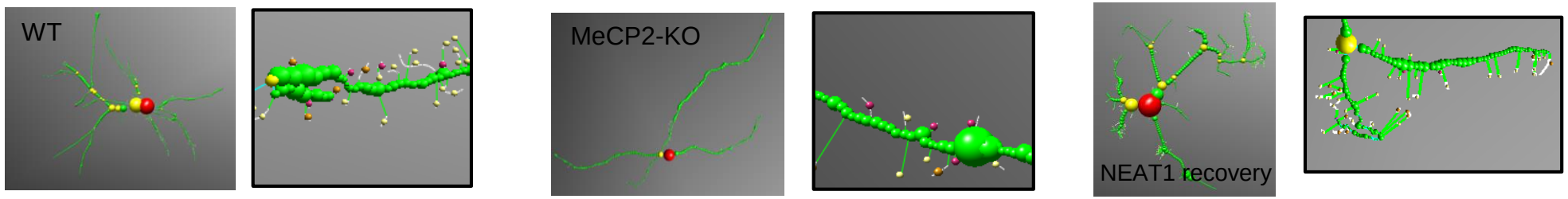


- *NEAT1* recovery improves RTT cellular phenotype



Neuron reconstruction



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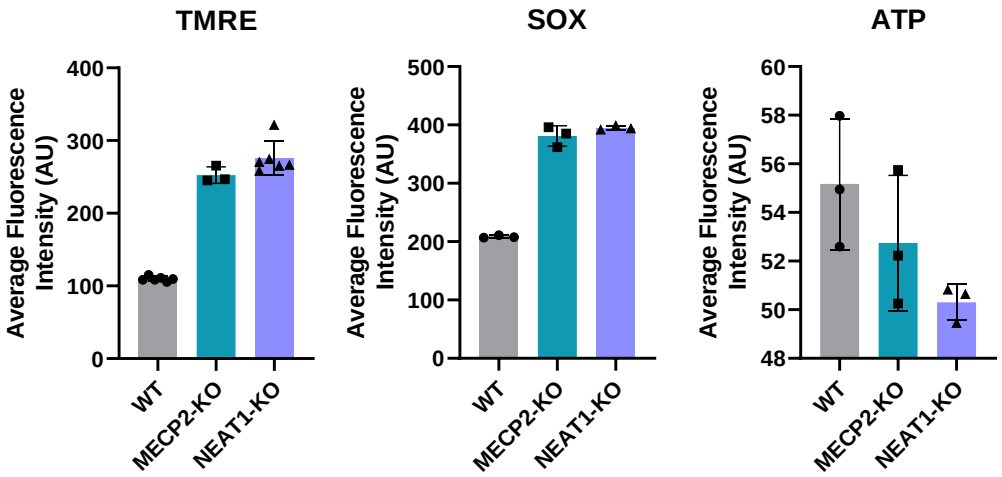

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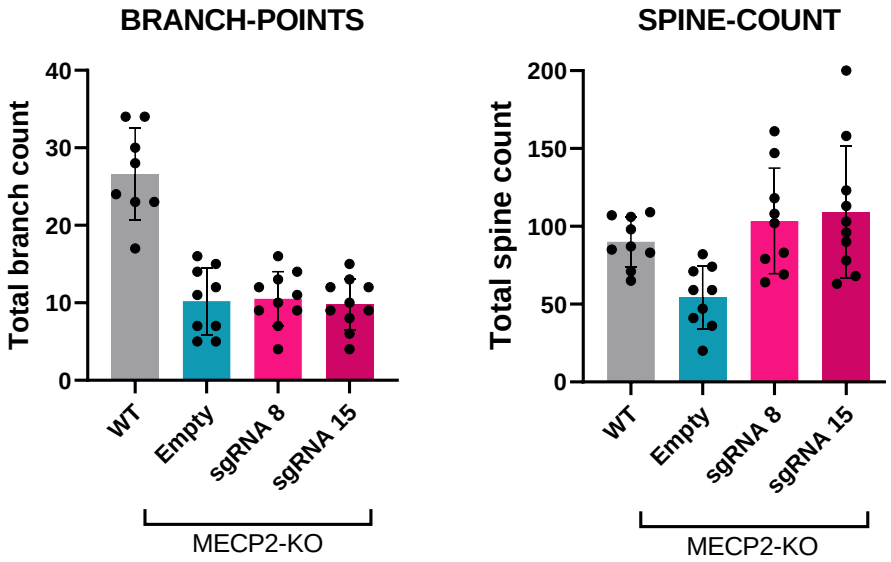

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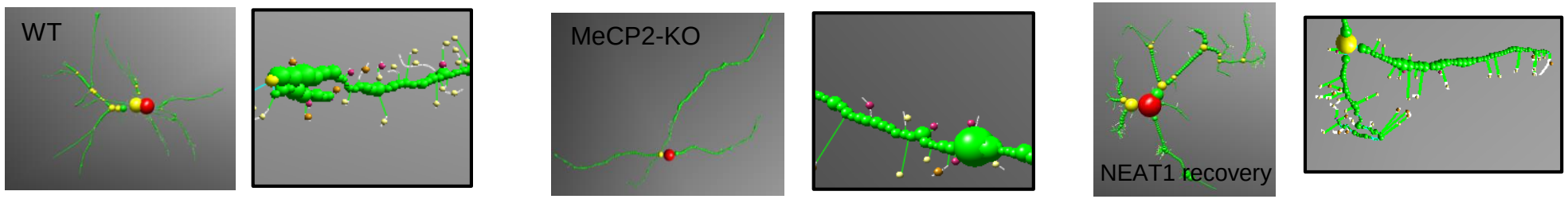

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